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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 102

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FRANCE TO ENRICH URANIUM FOR MEXICAN REACTORS

FL081550 Mexico City NOTIMEX in Spanish 0025 GMT 8 Jun 81

[Text] Mexico City, 7 Jun (NOTIMEX)--The "UF-1" project, jointly carried out by FERTIMEX [Mexican Fertilizer Enterprise] and URAMEX [Mexican uranium] will provide the latter organization with 150 tons of concentrated uranium per year. This was reported by an official spokesman for Mexican Uranium who also said that the processing plant which will extract concentrated uranium from the phosphoric rock FERTIMEX uses for its fertilizers is being installed at Pajaritos, Vera Cruz.

The processing plant that Spain sold us is one of the most modern in the world and while it will provide URAMEX with concentrated uranium, it will also give FERTIMEX a cleaner product for its fertilizers, the source said.

The previously mentioned 150 tons of concentrated uranium will be sent to France for enrichment, since we have a specific agreement with that nation for the enrichment of our uranium to be used in the nucleoelectric reactors at Laguna Verde, Vera Cruz. The same source said, however, that the agreement with the French Government has not been ratified because of a delay in starting up the first Laguna Verde 650-megawatt reactor (which may start operating in 1984, according to the source). The source explained: "We have over a year to ratify the uranium enrichment agreement, so the Mexican officials are not at all worried."

The same source recognized, on the other hand, the great importance of the French Government's offer to Mexico to acquire "EURODIF" shares, a company owned by several European governments which dedicates itself to uranium enrichment through a gas diffusion process. Our source mentioned that 11 percent of the "EURODIF" shares are available. They are the shares rejected by the new Iranian Government and which Mexico could buy in order to enrich the uranium required by its nuclear plants.

CSO: 5100

BRIEFS

URANIUM DISCOVERY--A Japanese public corporation, the Power Reactor and Nuclear Fuel Development Corporation, has confirmed the discovery of a rich uranium deposit in desert country about 1,000 km east of Kalgoorlie, western Australia. The deposit is said to contain at least 10,000 tons of uranium. The concentration of the ore is more than 0.2 percent, or comparable with the Big Ranger Mine in the Northern Territory. [Melbourne Overseas Service in English 0830 GMT 11 Jun 81 BK]

CSO: 5100

BRIEFS

NUCLEAR WASTE SHIP DESIGNED--Tokyo, 2 Jun (KYODO)--The Science and Technology Agency has completed designing a 3,000-ton ship intended to carry and dump radioactive waste in the central Pacific between Japan and the Mariana Islands. Agency officials are not sure, however, when construction of the vessel starts because the islanders and Japanese fishing companies are opposed to its plans to dump radioactive waste in the area. The agency's dumping program was initially scheduled to start this summer. The vessel can carry a maximum 3,500 200-liter drums a trip. It compares with 300,000 drums of radioactive waste discharged and stored in Japan. The ship was designed and completed by Mitsui Engineering and Shipbuilding Co on commission from the Science and Technology Agency. The agency had asked the radioactive waste management center to design the ship, which will be built at a cost of about yen 2 billion. A spokesman for the Tokyo-based private center said the vessel will feature double bottom paltings (as received] to make it more resistant to overturning. The hold will be waterproof and be divided into six compartments so that radioactive waste will not spill out even if the ship takes water, the spokesman said. He said the design will be studied by 10 electric-power companies which set up the center. Kijuro Ono, a center executive, said it will take about a year to build the ship. He quickly added, however, its construction will be started only after the government wins agreement from the Pacific islanders and Japanese fishing companies. [Text] [OW021133 Tokyo KYODO in English 0851 GMT 2 Jun 81]

URANIUM EXTRACTION ABSORBENT--Takamatsu, 9 Jun (KYODO)--The Ministry of International Trade and Industry has developed the world's most sophisticated absorbent to extract uranium from sea water. The absorbent was developed jointly by the government industrial research institute, Shikoku, of the ministry's Agency of Industrial Science and Mitsubishi Chemical Industries' research institute. The new technology will be reported at a meeting of the Nippon Kaisui Gakkai (Japanese Society of Sea Water Science) opening here Wednesday. The absorbent, made from acrylic fiber, could extract four milligrams of uranium per one-gram absorbent after being immersed in the sea for 10 days. The absorbent's capacity of extracting uranium from sea waters is said to be 20 times higher than that of existing technology using titanic acid. The institute will also gather data for practical use of the new technology at a model plant to be built in Nio, Kagawa Prefecture, by the metal mining agency of Japan. [Tokyo KYODO in English 0354 GMT 9 Jun 81 OW]

CSO: 5100

SECURITY OF NUCLEAR CRITICAL, SUBCRITICAL SYSTEMS, RESEARCH, TRAINING REACTORS REGULATED

Budapest AKADEMIAI KOZLONY in Hungarian 26 Mar 81 pp 45-46

[Text] Act No OEB-E of 1/1981 of the chairman of the National Atomic Energy Committee concerning nuclear safety questions of critical and subcritical nuclear systems, research and training reactors.

On the basis of the authority in Section 4 of the Resolution No 1024/1978 (VII. 4.) of the Council of Ministers, I am issuing the following:

Section 1

The Act applies to the critical and subcritical nuclear systems and to research and training reactors (hereafter collectively called: atomic reactors).

Section 2

The following agencies have jurisdiction for nuclear safety questions: primarily, the Central Research Institute of Physics of the Hungarian Academy of Sciences; secondarily, the Office of the National Atomic Energy Committee (hereafter: the Authority).

Section 3

(1) On the basis of the license issued by the Authority, an atomic reactor may be:
  1. constructed (construction license);
  2. start up or operational (operating license);
  3. modified (modification license);
  4. closing down (decommissioning license).

(2) Duration of the operating license may not exceed 20 years from date of issue.

(3) The license awarded by the Authority does not relieve the licensee from the obligation to acquire other pertinent official permits prescribed in specific legal regulations.

(4) The Authority may revoke the license if it finds during the inspection or learns by other means that the nuclear safety regualtions have been violated.

(5) The licensee must report to the Authority any changes in the conditions which have been taken into consideration when the license was issued. On the basis of the report, the Authority may modify or revoke the license.

Section 4

(1) The conditions for constructing, starting up, operating, modifying and closing down nuclear reactors with reference to nuclear safety regulations as well as details concerning licensing are contained in the published supplement to this directive.

(2) a) The safety regulation for critical and subcritical nuclear systems;

b) I order the obligatory application of safety regulations to research and training nuclear reactors. The parties concerned will receive the regulations directly.

Section 5

(1) The Authority shall inspect the operation periodcally--at least annually. Inspection of the operation should reveal whether the nuclear safety regulations have been followed during the operation of the nuclear reactor.

(2) The Authority is entitled to carry out its inspection without any preliminary notification. The operator must ensure the opportunity and the conditions of the inspection.

(3) Results of the inspection must be recorded in a report, a copy of which must be forwarded to the operator. The latter is obligated to take all necessary steps without any delay on the basis of the material contained in the report.

Section 6

(1) The operator of nuclear reactors must report to the Authority without any delay all unusual events, as defined in the regulations.

(2) The Authority is obligated to investigate--with the cooperation of the other involved agencies--the cause and the consequences of the reported unusual event. The operator is obligated to ensure the preconditions for the examination.

(3) With the exception of emergency measures and steps taken to eliminate further risks, the site of the unusual event must be preserved intact as far as possible until the start of the examination, without interfering with the activities of other agencies empowered to act.

(4) During the examination the operator must submit the data requested by the Authority and must provide all needed information. The Authority is empowered to remove, against receipt, material evidence which does not interfere with the activities of other agencies entitled to act in the matter and to initiate measures needed to protect life, health and property.

Section 7

This Act takes effect on February 1, 1981.

Gyula Szeker, m. p.

2210
CSO: 5100/3017

BRAZIL, ARGENTINA TO ENRICH URANIUM

Cooperation May Cut Costs

PY090333 Rio de Janeiro O GLOBO in Portuguese 8 Jan 81 p 10

[Article by Walter Diogo]

[Excerpt] Buenos Aires (O GLOBO)--Argentina and Brazil may join together to build the uranium enrichment plant in Espiritu Santo. In doing so, they will be repeating what the UK, the FRG and the Netherlands did when they united their technical and financial resources to build a similar nuclear plant.

Admiral Castro Madero, the chairman of the National Atomic Energy Commission [CNEA], has noted that this project is still in the planning stage and that it must be in keeping with the nuclear agreements signed recently by Argentina and Brazil.

The two countries cannot now jointly undertake the construction of a uranium enrichment plant because this undertaking demands a greater political understanding between the two countries and a greater technological integration in the nuclear field. The agreements signed recently, which stipulate the reciprocal ordering of nuclear equipment, is the first step. This will result in reciprocal projects for the transfer of technology and a better understanding of the two nuclear programs, all of which will help to carry out programs of mutual interest.

Castro Madero believes that the partnership of the two countries in building the uranium enrichment plant may benefit both Brazil and Argentina since it will decrease the cost of both countries' nuclear programs. He noted that there is proof in Europe that similar cooperation programs have yielded good results in decreasing investments and increasing profit.

Hans Frewer, the vice president of KWU [Kraft Werke Union], believes that this association is important for Argentina since the association will enable Argentina to have access to technology that it is unable to obtain elsewhere today. He noted that the FRG experienced many political and economic pressures from both the United States and Europe because it signed a nuclear agreement with Brazil and because it committed itself to transfer its uranium enrichment technology. But today this technology cannot be transferred to any developing country. Argentina itself, for example, did not have access to this technology when it recently signed a nuclear agreement with the FRG that was quite similar to the agreement that the FRG signed with Brazil. Therefore, this possible association with Brazil in the building of a uranium enrichment plant will enable Argentina to have access to something that it cannot obtain because of international pressures.

From the economic point of view, Argentina may also receive some advantages. The nuclear programs of Brazil and Argentina are quite different. Argentina uses heavy water reactors fed with natural uranium, which costs about 25 percent more than the pressurized water reactors that are fed with enriched uranium, the system adopted by Brazil.

It is evident that Argentina is using the natural uranium system because it lacks the technology needed to process enriched uranium. But if Argentina has access to this technology, it may in the future modify its nuclear program to decrease its cost.

Itamaraty Denies Project

PY092334 Brasilia Domestic Service in Portuguese 2200 GMT 8 Jun 81

[Text] Itamaraty has no information about a possible Brazilian-Argentine association for the construction of an uranium enrichment plant--which was announced in an article published in a Rio de Janeiro newspaper by the chairman of the Argentine atomic energy commission.

The Brazilian Foreign Ministry added that the FRG-Brazilian nuclear agreement prevents Brazil from associating with a third country for the transfer of uranium enrichment technology.

CSO: 5100

NUCLEAR COOPERATION BETWEEN BRAZIL, ARGENTINA DENIED

PY092242 Buenos Aires TELAM in Spanish 1505 GMT 9 Jun 81

[Text] Buenos Aires, 9 Jun (TELAM)--Vice Adm Carlos Castro Madero, chairman of the National Atomic Energy Commission [CNEA], has denied reports released by the Rio de Janeiro newspaper O GLOBO that Argentina and Brazil are going to form a joint venture to build a uranium enrichment plant.

In a telephone conversation from Vienna (Castro Madero is in that city participating in the meeting of IAEA governors), he answered a question by the CNEA in Buenos Aires, saying that the report is absolutely incorrect and that he had never made such statement.

Castro Madero added that the rumor is false, because Argentina already has decided in favor of using natural uranium in order to avoid the uranium enrichment process.

Moreover, reports coming from Brazil state that the Brazilian state company Nuclebras [Brazilian Nuclear Corporation] has denied the existence of joint studies with Argentina for the construction of a uranium enrichment plant in Brazil.

Nuclebras press adviser Cesarion Praxedes has stated that Nuclebras became aware only through the press of remarks attributed to Castro Madero that plans exist for the installation of a uranium enrichment plant.

Rumors in this regard were published yesterday by a Rio de Janeiro daily, and Ricardo Alberto Ramayon, charge d'affaires of the Argentine Embassy in Brasilia, stated that he has not yet received an official report on the subject from Buenos Aires. Moreover, a Brazilian Government source stated that a program of this nature would be incompatible since the Argentine nuclear program uses natural uranium to feed its reactors.

He also recalled that Argentina has a reactor which is already operating, another under construction and three other projects, all of them operating with heavy water and natural uranium, thus avoiding the use of enriched uranium.

He also indicated that in the short run, Brazil is not in a position to develop joint programs in enriching uranium with other countries because it has not yet assimilated the uranium enrichment technology from the FRG, with which it signed a nuclear cooperation agreement in June 1975.

CSO: 5100

BRIEF DESCRIPTION OF TANDAR PROJECT PUBLISHED

Buenos Aires CLARIN in Spanish 10 May 18 Supp p 19

[Text] One of the golden dreams of physicists is to penetrate the secrets of matter. The Argentines, of course, are not an exception to the rule and now feel that they will be able to touch the atom with their hands, thanks to the gigantic accelerator which will be available to them in the very near future.

In fact, the Tandar project has equipment capable of energizing and, therefore, accelerating ions; i.e., atoms which lack a certain number of electrons of which have excess numbers of them.

The equipment permits them to play with the tiny "elves" of the subatomic world, whether they be protons and their constituent particles of neutrons. For our professionals, such equipment broadly exceeds all expectations and as soon as installed will place them on a par with their colleagues in the principal world centers with respect to research hardware.

This project is of enormous significance to the country, even though its results cannot be immediately determined from the strictly practical and day-to-day standpoint. The National Atomic Energy Group responsible for this very specialized task is made up of scientists whose work has been highly praised internationally. Obviously, all this was possible thanks to the fact that they had use of a synchrocyclotron and another type of accelerator which enabled them to contribute their "tiny grain of sand" to that patient work of the world scientific community.

What is more, however, Tandar is a wellspring of development for a broad gamut of technological processes. For example, the mere construction of the steel cylinder to house the chamber in which ions are accelerated called for sleepless nights and days on the part of those engineers who were responsible for designing it.

In the electrostatic chamber, between electrodes located in the center and the upper and lower extremes--the chamber is installed vertically-20 million electron volts are attained. This places the equipment in the forefront of research instruments, as there are only two others of its kind in the world.

Basic research programs will take up 75 percent of the operating time of this very sophisticated instrument. In this sector, plans call for the use of two-thirds of the operating time for nuclear physics; the remainder of the time is divided between the study of atomic phenomena and solid state physics, with a small amount of time to be used on astrophysics.

8143
CSO: 5100/2262

NATION'S, ARGENTINA'S DEPENDENCY IN NUCLEAR SECTOR CRITICIZED

PY032034 Sao Paulo FOLHA DE SAO PAULO in Portuguese 2 Jun 81 p 2

[Editorial: "Unnecessary Dependency"]

[Text] The basis of the nuclear agreement signed between Brazil and Argentina, now revealed by Nuclebras, brings out some mistakes of Brazilian policy in the atomic energy sector. The agreement establishes that NUCLEP [Nuclebras Heavy Equipment, Inc] will produce the lower reactor vessel for Atucha II for $1.1 million for Argentina. At the same time, it will purchase zircalloy tubes for $3 million for fuel element cladding. In addition, Brazil must import 280 tons of uranium oxide concentrates--commonly called "yellow cake."

With this transaction, NUCLEP seeks to answer the criticism regarding establishing NUCLEP, which many considered premature. Dedicated approximately 18 months ago, a factory producing heavy equipment for reactors, a Nuclebras subsidiary, it has been the almost unanimous target of repeated criticism from the national enterepreneurs in the capital goods and public opinion sectors.

This factory is the largest of its kind in the Western world. It has the capacity of producing in 1 year the heavy components for two reactors. Since its participation in the Brazilian nuclear program--by force of the agreement with the FRG--will be merely symbolic during the next few years, to avoid an absolute idleness, NUCLEP had to compete with the national equipment industry. This sector already had difficulties before NUCLEP entered the field. Thus, national private industry not only was losing an opportunity to supply heavy components for the nuclear program, but was also facing the competition of a state company. In fact, Petrobras has been one of NUCLEP's contractors.

To reduce the dissatisfaction of the entrepreneurs in the capital goods sector, Nuclebras has agreed not to act in areas traditionally covered by the established national production sector, although the contract with Petrobras shows that this limitation is only partial. Furthermore, the construction of heat exchangers for future reactors and some heavy equipment earmarked for Angra III, by concession of the KWU [Kraft Work Union], cannot adequately occupy the huge NUCLEP installations, which cost $355 million to build. This cost has been underestimated since it does not include the costs of assets and 1 and 1/2 years of idleness.

The agreement with Argentina reveals the planning inconsistencies in the national nuclear sector in another important aspect. The purchase of "yellow cake" shows that the Brazilian Government does not expect to finish the installations for the concentration of uranium oxide in time to supply fuel for the second charge of Angra I, which must take place in approximately 2 years.

The uranium oxide concentrates, purchased from Argentina, will be sent to The Netherlands for enrichment. Later they will be sent to Great Britain or France for manufacturing fuel elements earmarked for reactors built by the FRG with technology acquired from Westinghouse in the United States. This movement of the uranium is only the first stage of the nuclear fuel cycle and shows the current national dependency in the atomic sector.

With a parcel of the resources spent and the efforts made to acquire and install NUCLEP, which will remain primarily idle for a few more years, it would have been possible to build a plant for concentrating uranium oxide, thus eliminating, although for a short while, dependency in relation of our southern neighbor.

CSO: 5100

FAST BREEDER RESEARCH AGREEMENT TO BE SIGNED WITH ITALY

Minister Cals Announces Agreement

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 14 May 81 p 36

[Text] After announcing that contacts with Italian authorities in the nuclear field are not aimed at a new agreement of industrial and commercial type but rather an agreement costing $3 million annually, Minister of Mines and Energy Cesar Cals promised to publish a note yesterday in which he would explain the terms of that agreement in detail. However, the note he published added nothing to his statements on the subject, which were made during the opening of the exposition "Brazil of the Mines and Energy-81," held yesterday.

According to Cesar Cals, the agreement, not a contract, with Italy, because of its characteristics and content will serve to fill "existing gaps in knowledge and experience through a system of international cooperation at the level of training and research." He added that the measure will be effective for 3 years, during which studies in the area of fast breeders will be developed at a cost of around $3 million per year.

The minister declared that the energy part of the Brazilian nuclear program is based on the creation of an industry for that area and on the transfer of technology of PWR, light water reactors. As a result of the burning of uranium "a considerable amount of plutonium, also a fuel, will be generated. The country has to absorb that technology and insure an independent policy in the near future, "always at the service of peace."

Fast Breeder Reactors

He also said that by the end of the decade the fast breeders using plutonium will begin to operate commercially and that Brazil, having already consolidated its future in the context of light water reactors, cannot, under penalty of stagnating, relinquish research and development of that type of reactor. That being so, he pointed out, the option for the development of fast breeders is also the result of the search for all possible sources of energy, "a subject which interests Brazil as an emerging nation."

If uranium in PWR reactors were the only source adopted, added Cesar Cals, the reserves of that material would be quickly exhausted and the nuclear area would be only "an episode in the history of world energy development." Fast breeders, producing a new fuel (plutonium) from U238 during their operation, allow the multiplication by nearly 70 times of the energy potential of uranium reserves. According to the minister, that means that on a world level, "there will be a practically unlimited amounts of energy available and, in fact, a stabilizing action in the uranium market."

In the case of Brazil, the introduction of those fast breeders is an objective of fundamental importance in the context of the nuclear program, according to Cesar Cals. He added that the fact that commercial use of fast breeders in Brazil "is two decades away," provides the opportunity for a gradual effort, optimizing the conditions for its accomplishment. That effort, considered small, however, is focused on a program of research and raising the level of competence "which shall be the foundation of all future development in the area."

Research With Italy Wanted

Rio de Janeiro JORN'L DO BRASIL in Portuguese 19 May 81 p 15

[Text] Brasilia--Brazil chose Italy as a partner for a minor agreement on the exchange of scientific information and the exchange of technicians in the area of fast breeder reactors, which represent the next generation of commercial nuclear reactors.

The agreement, revealed in recent days with great emphasis by Minister of Mines and Energy Cesar Cals (although he refuses to reveal the partner), will be signed within the CNEN--National Nuclear Energy Commission--and not with NUCLEBRAS [Brazilian Nuclear Corporations], which emphasizes the strictly scientific nature--not technological-of the exchange.

Attempt Failed

The CNEN, which some time ago received back from NUCLEBRAS the two nuclear research institutes in Rio (IRD--Radiation Protection and Dosimetry Institute and the IEN--Nuclear Engineering Institute) seeks to place monitoring of the program within the framework of the latter.

The commission only sought another partner for that agreement after all attempts were exhausted for putting into effect a similar agreement with France--except more wideranging--signed with that country at the beginning of July 1975 by the CNEN and NUCLEBRAS together.

The agreement with France--the most advanced country in the development of fast breeder reactors and with a prototype in operation for commercial demonstrations and a commercial powerplant of that type in advanced stages of construction--would have made it possible for Brazil to participate in Project Cobra and foresaw the installation at the CDTN--Nuclear Technology Development Center--in NUCLEBRAS in Belo Horizonte of a small research reactor called Minerva.

However, the agreement, in that which had to do with the supply of fuel elements, which according to the original Minerva project would be manufactured from 75 percent enriched uranium (a high enough proportion to produce a nuclear explosion), came to naught because it remained a decision by U.S. official agencies.

The United States, which had already opposed the Brazil-Germany Accord, did not approve--through the NRC--the supplying of highly enriched uranium to Brazil via France. NUCLEBRAS, in the CDTN, reformulated the project of the core of the research reactor so that it could serve the purposes of fast breeder research but working with only 25-percent enriched uranium. Even so the United States vetoed it and the agreement failed.

France Could Be Partner

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 9 May 81 p 23

[Editorial: "And Now We Go to the 'Breeders' "]

[Text] The report, officially confirmed by Minister of Mines and Energy Cesar Cals, that Brazil is going to sign a new nuclear agreement, this time in the area of fast breeder reactors, shows the determination of the federal government of continuing to invest in the acquisition of advanced nuclear technology. Indeed, fast breeders represent the latest line of reactors and only now under the Reagan Administration does the United States decide to become involved in that field. France is already very advanced, practically leading the Western World in that area, everything leading one to believe, therefore, that the future Brazilian agreement will be signed with that country.

Confirming the report, although without naming the Brazilian partner specifically, Minister Cesar Cals sought to present the facts in such a way that they would invoke national pride: We are not the prisoners of West Germany and we can sign nuclear agreements with as many countries as we desire...In that respect, the minister is using a perfect technique because by announcing the future agreement almost on the eve of the trip by President Figueiredo to Germany, it places us in a more comfortable position for negotiating the revision of the terms of the commitment already signed with the Germans.

However, it is important that such declarations of independence or strategic moves do not cause too much enthusiasm in the government--some areas of the government, because the entire nation has already expressed itself against nuclear adventure--to such a point that it will lead the country to sign new agreements which will be added to that with Germany, harming the energy sector and the national economy even more.

Everything seems to indicate that the new agreement to be signed "is a sort of technological cooperation," said the minister. If it is a matter of technological cooperation only in which we will be training national technicians for the assimilation of new knowledge, we are fully in agreement. In that respect, that was the type of agreement Brazil should have signed with Germany and not the "white elephant" of the eight nuclear powerplant, which are going to cost $30 billion with a debatable transfer of technology.

Therefore, although there are still many steps to be taken before reaching the fast breeders, we can always acquire new knowledge, which cannot fail to be useful in national scientific development. There is, however, one vital aspect of that new agreement which needs to be immediately clarified by the federal government: That nothing be done without the close and in-depth cooperation of Brazilian scientists and that contrary to what happened with the agreement signed with Germany, our universities and our physicists will not be alienated from negotiations from the beginning.

Unless that takes place, we run the risk of once more committing the same errors, perhaps voluntary, of the past, turning over to laymen the decisions on subjects which are essentially technial, maintaining an absurd secrecy under the childish argument of "national security." All that, obviously, based always on the principle that the new agreement, now for the newest generation of reactors, is not going to be too expensive and that these are only research agreements...After all, after the madness of the nuclear agreement with Germany, anything can be expected from NUCLEBRAS.

8908
CSO: 5100/2249

TROUBLES AT NUCLEAR PLANT CONFIRMED BY OFFICIAL

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 12 May 81 p 32

[Article by Clovis Assumcao: "FURNAS Confirms Failures at Angra"]

[Text] The president of FURNAS [Brazilian Powerplants], Licinio Seabra, in Rio yesterday confirmed all the problems which have arisen with the equipment of Angra I during the tests made before the loading of nuclear fuel, which should take place next 6 July--although the company is working "with very tight deadlines because of the normal requirements imposed by the National Nuclear Energy Commission, CNEN." He also explained that the Brazilian nuclear program has already spent nearly $2 billion; nearly $1.3 billion for Angra I and $700 million for Angra II and III.

The rescheduling of Angra I quadrupled its price, taking into account the initial total, which was $320 million. The cost per installed kilowatt, according to Licinio Seabra, is around $2,000. In 1972 it was estimated at only $500. There were successive delays during the work for various reasons and up to now costs have reached $1.3 billion, including financing costs. He said that three basic factors caused the increased cost of the unit: financing costs, costs of services and costs resulting from the time factor (the greater the delay the greater the cost).

The FURNAS executive recalled that because of safety measures, many demands were made and the burdens became heavier each time. Of the total cost of the powerplant, $250 million were obtained abroad in equipment and services through the Export-Import Bank and $1 billion came from the national energy sector through ELETROBRAS [Brazilian Electric Power Companies, Inc].

Angra II and III

Last 31 December, the costs for Angra II and III had already reached $700 million (including financing charges), of which $350 million were obtained abroad and the rest provided by ELETROBRAS. Of the foreign total, $70 million were for equipment, $80 million for services and $200 million were negotiated with financial institutions abroad.

Costs at today's prices calculated for Angra II and III reach $3 billion, it was revealed by Licinio Seabra. As for FURNAS, its president said that the company's debt up to the end of the year 1980 was 196 billion cruzeiros, of which 120 billion cruzeiros were foreign loans.

Problems

The president of FURNAS confirmed the failures and damage of the powerplant equipment during the many tests to which it is being subjected. With respect to the three pumps of the secondary cooling system of the reactor, two of them suffered very serious damage, one of them being rendered completely inoperable. The other was sent to the United States for repairs which were of no use and had to be returned to the manufacturer, Westinghouse. Because of these difficulties, Westinghouse had to supply two new pumps obtained from another nuclear powerplant being built by the North Americans outside of Brazil. The manufacturing of a pump of that type takes a year and a half, since they are gigantic and highly sophisticated (They are rated at 125 horsepower).

He pointed out that the pumps are very important for the plant because when they fail the entire unit has to stop, for which reason FURNAS has a spare in case of an emergency. Of the pumps damaged during tests, one suffered "vibrations," "probably because it was not aligned." As far as the second one is concerned, "it is presumed" that one of its valves closed, raising pressure above normal and breaking its components. It takes a day to install the spare pump as a replacement and it now takes a year and a half to obtain another from the manufacturer.

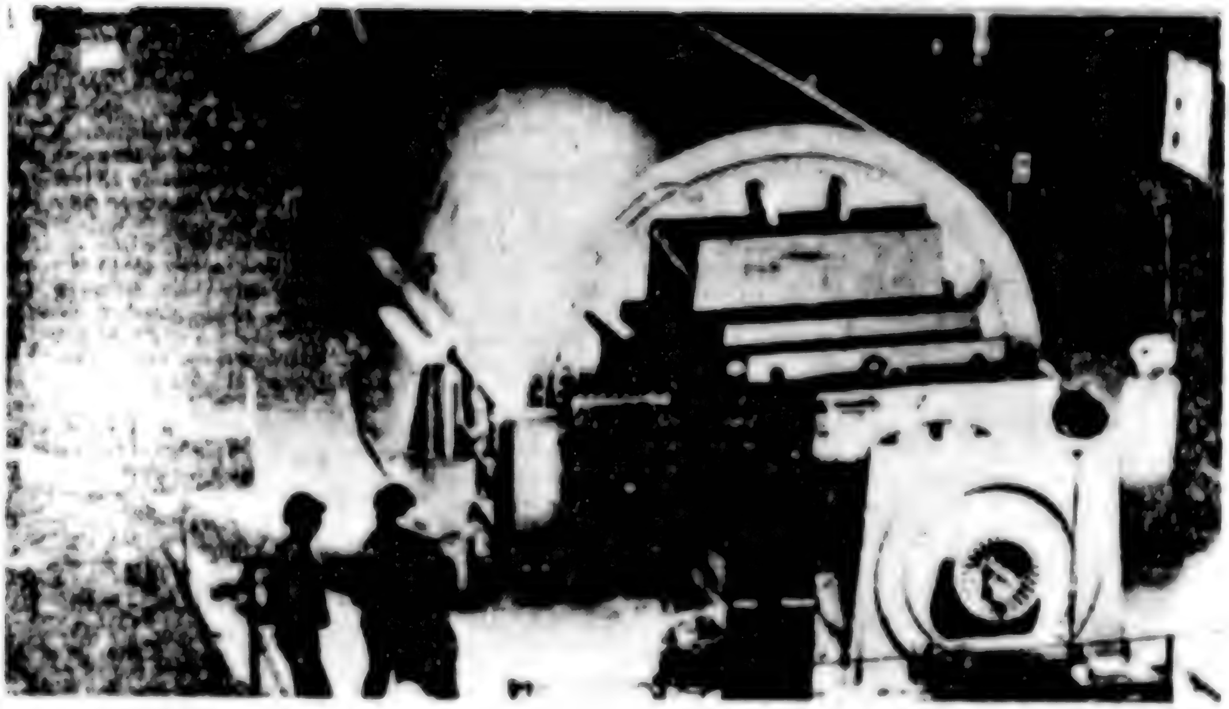
However, an investigation is still underway to establish whether the fault for those failures and damage was that of the buyer or the seller. Whoever is responsible will bear the blame. Licinio Seabra declared that the subject is already under investigation by Brazilian and North American technicians.

Transformer

During the cold tests of the powerplant, the 138 volt transformer for auxiliary services burned out. It had to be repaired in Brazil but some parts had to be imported. Licinio Seabra emphasized that as a security measure a spare transformer was ordered and it is already at Angra. He repeated: "When it is a matter of security, there is nothing to discuss or think about."

Despite those impasses, which are normal in the testing phase everywhere in the world in the understanding of Licinio Seabra, the timetable for loading the core during the first half of next July is being maintained. Four months after the insertion of the fuel, what the FURNAS president calls "the critical period" will begin. It is a sort of test by fire. If in that period there arises the slightest problem, the problem of time will neither be discussed nor hinted at. The important thing will be to overcome adversity with nuclear precision. However, he is optimistic and declares: "Everything is going to come out all right. Our relationship--FURNAS and the CNEN--is very good and that is why we are going to come out all right once more."

Following the loading of the core, the powerplant will begin to operate at 10 percent of its capacity, rising to 30, 50, 75, 90 and 100 percent. The current generated will be placed on the transmission lines automatically. The total capacity of the powerplant is 626,000 kilowatts. With respect to the turbogenerator of the powerplant, the president of FURNAS pointed out that "everything is in order."



Two of the three pumps of the reactor secondary cooling circuit were damaged.

8908
CSO: 5100/2249

ARMY NUCLEAR STUDIES CENTER CELEBRATES ANNIVERSARY

Santiago EL MERCURIO in Spanish 30 May 81 p C-3

[Text] "We are preparing to attain our future goal, which is the production of energy from nuclear fuel." This statement was made by the commander of the Military Industries and Engineering Command, Gen Hector Orozco, when he participated in the celebration of the eighth anniversary of the Army Nuclear Studies Center, CENE.

The ceremony which was held at the Lo Aguirre central office was attended by the president of the Chilean Nuclear Energy Commission, Gen (R) Herman Brady; the director of the central, Gen Juan Mir Depuy; the vice president of CORFO [Production Development Corporation], Col Francisco Ramirez; and other military authorities.

During the ceremony, the new combat standard of the center and the barracks of the soldiers assigned to that location were turned over.

Later length-of-service medals were awarded to outstanding military personnel.

The principal speech was made by the CENE director who emphasized the army's mission of providing physical security for the La Reina and Lo Aguirre centers, in the Santiago Command Garrison.

"By providing physical security, an important mission is being performed for this center at both the national and international levels. At the latter level, the importance of the mission derives from agreements signed by Chile with international atomic energy organizations."

For his part, General Orozco, commander of the Nuclear Studies Center, said, "The mission of CENE is to cooperate in the development of the country's energy by serving as a practical laboratory for army officers and nuclear engineers who wish to have in-depth knowledge of this subject."

He explained, "Nuclear energy is the fuel of today and the future; and our goal is to produce this kind of energy to accelerate the development of our country."

Nuclear Plant

Nuclear energy made news last year when the government decided that the installation in Chile of a nuclear reactor for the generation of electrical energy would not be profitable; therefore, plans to this effect were placed on hold until the end of this century.

This notwithstanding, a review of the background information available in 1985 was ordered to determine whether conditions will be different and whether a change in the initial decision will be in order.

Studies on the construction of a nuclear plant in Chile were started 20 years ago; however, they were accelerated after the establishment of the Nuclear Energy Commission in 1974.

8143
CSO: 5100/2270

SUTIN: REACTORS WILL NOT AFFECT LAKE PATZCUARO

Mexico City EL DIA in Spanish 17 May 81 p 2

[Article by Pedro Raul Ocampo]

[Text] Morelia, Mich., 16 May--Lake Patzcuaro's ecosystem will not be affected in any way by the Reactor Engineering Center of the National Institute of Nuclear Research, should the center be constructed in that area.

The aforementioned center would take from the lake only the amount of water required for its internal combustion processes, after which it would be routed to a cooling system, but such water would never be returned to its original source.

The foregoing was announced by the secretary general of the Single Union of Nuclear Industry Workers, Arturo Walhey.

He said the water is taken from the lake and enters, an 18,000-cubic-meter storage tank. Afterwards it passes to a temperature regulator in the reactor and later to a washing tank where the fluid is cooled. Finally it is transferred to the storage tank.

The amount of water taken from the lake would be around 115,200 liters, the SUTIN [Single Union of Nuclear Industry Workers] representative explained. This quantity is minimal compared with the total volume of the lake, which is around 700 billion liters. In addition, the water taken would be replaced by the annual rainfall.

The Reactor Engineering Center would be composed of one zero-powered reactor for experimental purposes, which would be finished within 2 and 1/2 years, and a 40-megawatt reactor, which would be in use within 8 years, Whaley [sic] concluded.

At the same forum, entitled, "Patzcuaro: Structure and Dynamics of the Lake Area," Alejandro Villamar, a researcher for the Department of Fishing, said that whether or not the Reactor Center is built on the aforementioned lakeshore, a discussion has been initiated which has resulted positively in serious research into the ecology of the region.

The conclusions aired at the forum this morning are:

--It is not possible for subterranean currents to enter Lake Patzcuaro. The only way would be through the waters of Zirahuen Lake, but this is too far away and it is very small.

--The Lake Patzcuaro area is not affected by earthquakes, since it is outside the area of the nation which is subject to great seismic activity.

--There are geological fractures 10 kilometers from the lake zone in question, but to install a nuclear reactor without encountering the problem of faults, it would have to be only 400 meters away from them, and therefore there would be no danger.

--Marine species have been introduced into the lake in an irresponsible manner, as with carp, for example, which preys on other fish.

--Whitefish has been overexploited, not only in its adult stage, but in the so-called "tripilla" and in the eggs and young of the charal.

--There has been much deforestation of the area, and it is urged that trees be planted again throughout the wooded area of the basin.

8735
CSO: 5100/2264

'RESUMEN' MAGAZINE, 'TASS' VISIT NUCLEAR REACTOR

Caracas RESUMEN in Spanish 24 May 81 pp 12-15

[Article by Abilia Moreno: "A Privilege Granted to Few--RESUMEN Saw a Nuclear Reactor Operating"]

[Text] Watching the activity produced by an atomic pile is not the privilege of ordinary eyes. Nevertheless, our periodical, which also has a teaching function, watched as three young Venezuelan scientists operated and maintained the only research reactor to be found in the country.

The Panamerican Highway lay behind us, and now the automobile sped off on a gentle slope to the first National Guard post. Here we encountered the first of the strict rules which must be observed to gain access to the IVIC [Venezuelan Institute of Scientific Research].

"Leave your identity cards here and put on this badge," the guard said, after having confirmed by telephone that in the nuclear engineering department up above, we were expected by Lt. J.G. Jose Lepervanche, chief of nuclear reactor RV-1, Pedro Mario Cano, supervising engineer, and Aristides Marcano, a researcher at the physics center of the IVIC. I could not conceal my anticipation. The photographer, Eduardo Riveros, felt the same.

We were to witness, on the basis of a very special privilege, how a nuclear reactor operates.

It is the only one in the country. The opportunity to be there at the center of the reactor platform was a unique one, and naturally not one available to just any individual. We should comment that the RV-1, the name by which the reactor is technically known, is normally visible on Saturdays to groups of students and highly skilled personnel who because of their research or applied activities in the branches of the physical, mathematical and chemical, as well as biological, sciences, engineering and other technologies, have an advantage over the ordinary citizen. However, when the RV-1 is in full operation, human access is heavily restricted, because of the dictates of physical safety for the individuals.

On this occasion, the nuclear engineering department invited RESUMEN to see how the installations associated with the RV-1 nuclear reactor are efficiently operated and maintained. Also present during the visit was Jose Mendez, our first thermal energy engineer, a graduate of Moscow University with a Master of Science of

Engineering, and Eugenio Alexeviev, the correspondent for the Tass Agency, for whom permission to be present that morning at the IVIC had been requested by the Soviet Embassy the preceding evening, due to the extreme interest of the subject.

What Is A Nuclear Reactor?

On a certain level, most individuals are aware that the IVIC has a nuclear reactor, but they believe it is not in use. Going to the extreme, some believe that the reactor has never functioned. It is often said that these same people are aware that the primary function of the nuclear engineering department is to maintain and operate the installations associated with the RV-1 efficiently, while at the same time providing aid to the customers with a view to the better use of this complex of apparatus. The second goal, in order of importance, is to promote the application of nuclear techniques in all realms of science and technology where they prove effective for the resolution of problems encountered in those activities.

Immediately upon our arrival we were invited to climb up to the top of a vast yellow platform, in the center of which stands the reactor, which has the following characteristics:

Three megawatts of thermic power;

Swimming pool, heterogeneous type, moderated and cooled by the forced circulation of pure air;

Graphite reflector, and U-235 fuel enriched to 20 percent.

While the RV-1 was being fired up, the scientists led us to the control room where, Jose G. Lepervanche explained, there are four electronic technicians and four electromechanics, "all of whom have taken courses or degrees in research reactors. They are responsible for the maintenance and operation of the apparatus. The nuclear electronics experts can repair or detect any failure occurring in a nuclear facility." In highly complex terms, the reactor chief explained that "the atomic pile of the IVIC was designed for the optimal use of the radiation produced within the nucleus by the uranium fission process. This radiation is made up of neutrons, with a maximal flow of 3.3 x 10 13 neutrons per cubic cm per second in the center of the core, and gamma radiation of thousands of roentgens per second, accompanied by other types of lesser interest."

Seeing our perplexity, Lepervanche explained in more understandable terms that the reactor reached critical mass, or the first chain reaction, on 12 July 1960.

"Critical mass is achieved at the moment when the reactor begins to function on the previously established patterns for its normal and complete operation. The reactor achieves nominal power on 10 October 1965." "Since then," engineer Cano added, "except for maintenance work, the correction of minor shortcomings and major changes, the reactor has been operating almost without interruption on its normal work schedule, without the occurrence of any kind of accident."

Experimental RV-1 Installations

The crucial moment had come. From the control room we returned to the reactor platform to watch it in operation. From 10 meters above it, looking toward the bottom, one could see luminous radiation, the source of which was the core, through the water.

This was the moment awaited by all, and Cano and Lepervanche took the opportunity to explain the components of the experimental RV-1 installations.

Fuel: The MTR type is used. Each element comprises 10 parallel plates made of an alloy of metallic uranium with aluminum (up to 28 percent in weight) and covered with aluminum. Each new fuel plate contains 67.5 grams of uranium, of which 13.5 grams are U-235 (the fusible isotope). The current configuration of the core involves 45 fuel elements, representing a total of 5.480 grams of U-235.

Control: Control of the reactor is carried out by means of the following elements:

a. Four Boral sheets, used to start up, effect major power changes, and shut down the reactor. In addition they represent the main safety elements, because they are speedily and automatically introduced in the case of any abnormality.

b. A Boral regulating rod which can be operated manually or automatically. It is used for small power changes and delicate power adjustments even when the reactor is stable. The installation of this research reactor led to a detailed installation the structure of which includes:

a. Radio tubes to the reflector, making it possible to have a high neutron and/or gamma flow for experiments or sample irradiation.

b. Tangential tubes making it possible to lower dry samples to the side of the core where there is radiation flow at substantial levels.

Vertical tubes:

Six aluminum tubes making it possible to lower dry samples to the side of the core;

Five radiation baskets which can be located within the core, thus achieving the highest possible flow levels for sample irradiation;

Two pneumatic systems making possible the automatic placement of samples to be irradiated in position near the core;

Two thermic columns, or graphite piles, making it possible to extract low-energy neutrons from the core for certain experiments;

One gamma radiation source. This is a channel for transferring the fuel in which high gamma radiation flow can be achieved through the utilization of used fuel elements.

A table s' ws the various means for the use of this radiation. In addition to what has been listed, there is a hot cell for the safe handling of highly radioactive elements and an installation for taking x-rays with neutrons, very useful for quality control in the manufacture of certain parts and x-ray studies with new and important characteristics. The physics center also has a 10,000-curie source of cobalt 60, which supplies high-level gamma doses.

The Reactor Is Indeed Functioning

As evidence that the RV-1 is indeed functioning, the scientists present said that at the reactor installations, projects are being carried out which always lead to success. Results of these include:

--The diffraction of neutrons is a phenomenon observed when a sample or object is bombarded with a beam of neutrons, which are deflected from their trajectory. As a result of this deflection or diffraction, information about the physical properties of solids and liquids and some biological materials is obtained.

--Determination of the uranium and thorium content of minerals by the delayed neutron method. With the irradiation of mineral samples by the pneumatic system of the RV-1, the subsequent production of neutrons from uranium fission and the thorium contained in the sample can be analyzed. This installation, equipped by engineer Cano, has already been satisfactorily used for the analysis of samples for the National Council for the Development of Nuclear Energy (CONADIN).

--X-rays with neutrons. This type of x-ray procedure is based on the use of a neutron beam to obtain photographic impressions of parts of different materials and to analyze their state and internal structure (weapons supervision, among other applications).

--Radioisotope production. Medium short life radioisotopes are produced for the other IVIC laboratories and some other bodies.

--Activities leading to the development of designs, experiments and research.

Venezuelan Automatic Uranium Analysis System

Everything described thus far is well known. It is an obvious and incontrovertible fact that in Venezuela as elsewhere there are men who love their country and who are working to rescue it from underdevelopment and mediocrity. But these are not men who do research to promote themselves, much less to obtain easy wealth. They are in the strictest sense of the word scientists, and as such, they do work characterized by excellence but demanding patience and humility.

It was this persistent and silent effort which, after arduous research, led Mario Cano, Chilean born but a nationalized Venezuelan, to the successful completion of the design of the Automatic Uranium Analysis System (SPAU). Like many important achievements, this one too has been for all purposes ignored, because the existence of this system is only known to the Ministry of Energy and Mines, the Ministry of Defense and the National University.

For example, no one is aware that the importance of the SPAU lies in its use for assessing Venezuela's thorium and uranium resources. With the expansion and improvement of this apparatus, it will be possible to obtain any information necessary about any type of ore found in a given sample. In Cano's view, the results obtained from this improvement and expansion of the SPAU should be kept in a national geological data bank of which, naturally, there is none in this country, where all the information about the minerals to be found in the national territory would be concentrated, so that Venezuela would thus have complete information about its mineral potential available.

The Neglected Science

The most surprising aspect of everything we saw at the nuclear engineering department of the IVIC is the youth of the researchers. Lepervanche is only 26, Marcano is not yet 29 and Cano, the oldest of the three, is 38. With them was Jose Mendez, 25, who has designed a steam generating system for the water pressure reactor, for use under Venezuelan conditions in an 880-megawatt nuclear plant.

With full pride, they can say that they, too, represent the Venezuelan affirmation.

"Concerning the fear ordinary people feel about the problems which may result from the use of nuclear energy, it becomes urgently necessary to establish that there is today a whole profound and scientific methodology for the treatment of radioactive waste, such that with the burial of nuclear waste underground we are in a way returning the radioactive elements to the source from which they came--the earth.

"Finally, it is also important to note that within the broad range of natural radiation surrounding us, nuclear waste procedures are negligible. It can be said that if the norms established for the operation of a nuclear reactor are observed, whatever type it may be, it is less dangerous, for example, than the installation of a conventional coal plant, where there are highly toxic wastes, sulfur and vanadium, basically, in concentrations with effects far exceeding those which nuclear radiation might cause in a living organism." All of the scientists present there agreed on this. By way of illustration, Mendez concluded with the comment that the first nuclear plant for generating electricity has been functioning in the environs of Moscow, a city of 10 million inhabitants, since 1954, "and to date nothing has happened there."

A Nuclear Alternative for Venezuela

Jose Mendez, a thermal energy and power engineer who has designed a steam generation system for a water pressure reactor for use under Venezuelan conditions in an 880-megawatt nuclear plant, said the following in discussing nuclear energy as an alternative for Venezuela:

"The limitation on reserves of organic fuels and the need to free oil and gas as raw materials for optimal use in various chemical industries contribute an element in contradiction with the immediate development of electrical energy production. Atomic energy offers an undeniable alternative to this contradiction.

"Up to the present atomic energy has achieved a very substantial success. At the time of the first international conference on peaceful uses of atomic energy (1955), there was only one thermonuclear plant operating with a power of 5 MBT, which had been commissioned in the environs of Moscow in 1954. The experience acquired in the operation of this plant revealed the real possibility of using atomic energy for the industrial production of electrical energy. However, it was not possible to select from the vast number of types of nuclear plants those with the best prospects, due to lack of functional experience with reactors. It was for this reason that the industrialized countries began to design and build thermonuclear plants of various types as industrial experiments.

"It was during the second conference on peaceful uses of nuclear energy in 1958 that the power of the nuclear plants in use reached 185 MBT. These were now plants with industrial capacity, but the construction costs and the cost of producing electrical energy were higher than the costs of the thermal power plants operating in the majority of cases with organic fuels.

"With the experience gained in operation and the work done to perfect nuclear plants, such development was reached that in 1964, when the third Geneva conference on peaceful uses of atomic energy began, the total installed power came to 5,000 MBT. In other words, in 10 years, the role of the nuclear industry had been multiplied by 1,000 times. As of that moment nuclear plants became profitable, with a high level of safety, availability and flexibility."

5157
CSO: 5100/2265

BRIEFS

REACTOR OPERATIONAL IN BEERSHEBA--The first nuclear reactor of its kind in Israel, serving research purposes, has recently begun operating at Ben-Gurion University in Beersheba. The reactor is subcritical, meaning it does not have enough nuclear fuel to produce energy. It is now serving for research on matters having to do with the development of reactors and measurements for the development of new types of fuels. Our correspondent in the south, 'Ofer Taler, visited the reactor, which is in the Department of Nuclear Engineering. [Begin videotape] The heart of the system of the Beersheba reactor is 10 meters below ground. Here, in this container, there are five tons of natural uranium in the form of fuel rods and light water. The reactor has a neutron accelerator and a control system. The reactor is subcritical, meaning that no energy can be produced from it. Since there are few [word indistinct] in this kind of reactor, there is no possibility of raising the supply level and there are no safety hazards involved. Research on the development of nuclear fuel and on the study of advanced reactor models has recently begun here. [end videotape] [Excerpt] [TA131915 Jerusalem Domestic Television Service in Hebrew 1830 GMT 13 Jun 81]

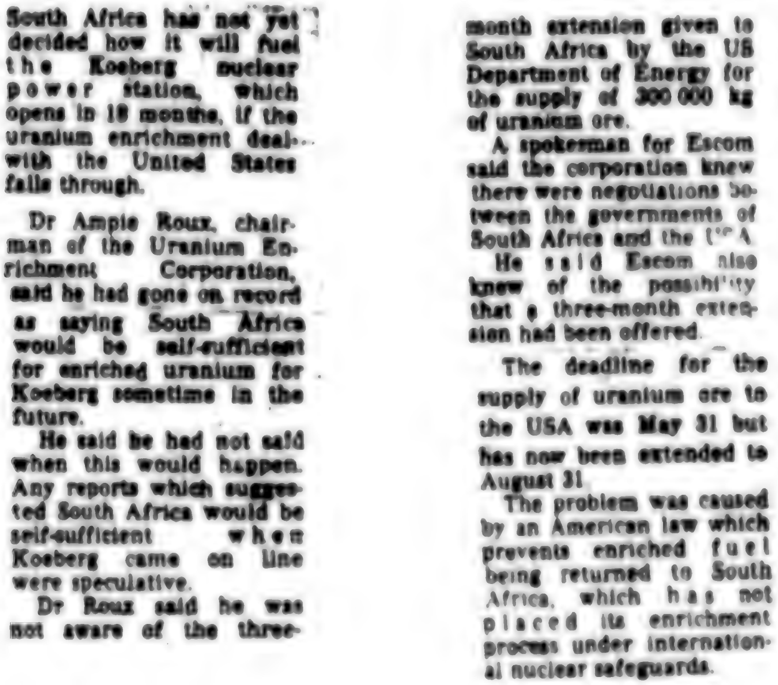
CSO: 5100

REPORTAGE, COMMENT ON FUEL FOR KOEBERG STATION

Ampie Roux Clarification

Johannesburg THE STAR in English 30 May 81 p 3

[Text]



South Africa has not yet decided how it will fuel the Koeberg nuclear power station, which opens in 18 months, if the uranium enrichment deal with the United States falls through.

Dr Ampie Roux, chairman of the Uranium Enrichment Corporation, said he had gone on record as saying South Africa would be self-sufficient for enriched uranium for Koeberg sometime in the future.

He said he had not said when this would happen. Any reports which suggested South Africa would be self-sufficient when Koeberg came on line were speculative.

Dr Roux said he was not aware of the three-month extension given to South Africa by the US Department of Energy for the supply of 300 000 kg of uranium ore.

A spokesman for Escom said the corporation knew there were negotiations between the governments of South Africa and the USA.

He said Escom also knew of the possibility that a three-month extension had been offered.

The deadline for the supply of uranium ore to the USA was May 31 but has now been extended to August 31.

The problem was caused by an American law which prevents enriched fuel being returned to South Africa, which has not placed its enrichment process under international nuclear safeguards.

Press Comment

Pretoria SOUTH AFRICAN DIGEST in English 8 May 81 p 26

[Selections from the "Comment & Opinion" section]

[Text] 'Die Transvaler'

Technological safari

The announcement by Minister F W de Klerk that South Africa can produce its own nuclear fuel for Safari 1 has been over-shadowed by the election news of the past few days.

The news that the Uranium Enrichment Corporation has found a method to enrich uranium by 45 per cent is the most exciting news for our nuclear scientists since South Africa found her own process for enrichment a few years ago.

This means that the research safari started about 30 years ago with the establishment of the Atomic Energy Board has proved to be well on the way to technological achievement. The immediate advantage of the latest news is that the Safari 1 research project can be continued, even if it is at a quarter of its capability, and that radio-active materials for medical purposes and further research can be produced. But it opens up new horizons in the long-term.

It is sheer conjecture but in times of energy shortages South Africa can profit if the country progresses to a point where it can produce just enough enriched uranium for its needs but perhaps also for the export of enriched uranium thus earning millions of rand.

Congratulations to Dr Ampie Le Roux and his colleagues on this achievement.

Johannesburg A — May 2

'Oosterlig'

Another breakthrough for SA

South Africa has not been broken by an arms boycott and has proved that its nuclear scientists will not allow themselves to be handicapped by America's decision not to supply fuel to the RSA.

They have, after all, succeeded in producing fuel elements for the nuclear reactor from 45 per cent enriched uranium. This is a notable achievement for South Africa in nuclear technology.

South Africa's process for uranium enrichment has already proved a great source of interest to inquisitive countries — to such an extent that America has tried to glean information through espionage. The latest development takes the country another step closer to total independence of foreign technology.

This is also necessary because it cannot be expected that foreign circles will make matters easier. The quicker the country learns to stand on its own feet, the less its vulnerability and therefore the greater the deserved admiration it can expect from outside.

Port Elizabeth A — April 29

CSO: 5100/4941

DANE-SWEDE POST-3-MILE-ISLAND PANEL: BARSEBACK PLANT IS SAFE

Copenhagen INFORMATION in Danish 20 May 81 p 1

[Text] The Danish-Swedish committee, which was created after the Harrisburg accident about 2 years ago in order to investigate the safety of the Barseback atomic power plant near Malmo, has now made its final report, which was published in Stockholm on Thursday.

The committee has concluded that there is no reason to question the safety evaluation which was the basis for the decision to construct Barseback.

The committee, which was headed by the former governor of Malmo, Gosta Netzen, and the chief of the Danish environmental board, Jens Kampmann, has indicated its satisfaction with the improvements which the Swedish authorities are contemplating or have already carried out to increase safety at Barseback.

The committee believes that the risk for a serious accident is quite small, and only a large accident would justify immediate measures to protect population at such a distance as the Danes along the Oresund coast against radiation.

The committee has concluded that the precautions which are planned to increase readiness on the Swedish side are sufficient. The committee, nevertheless, emphasizes that speedy and accurate dissemination of information to the people in the event of an accident is of the utmost importance.

The committee has thus fulfilled the task it received 2 years ago, but it will continue to exist in order, among other things, to review constantly reports and studies from atomic power plants abroad.

6893
CSO: 5100/2261

CHOOZ NUCLEAR POWER PLANT STILL NOT DEFINITE

Paris LE MONDE in French 15 May 81 p 37

[Article by Bruno DeThomas: "Mitterrand's Nuclear Policy: Construction of Chooz Power Plant Should be Reconsidered"]

[Text] One of the last actions taken by Mr Giraud, minister of industry of the outgoing government, was probably signing the public utility decree for the nuclear plant at Chooz in the Ardennes. However, there is every reason to believe that this decree will not be published in the Official Journal and therefore will have no effect.

In spite of the high degree of prudence exhibited in his statements with regard to nuclear energy during his election campaign, Mr Mitterrand wrote the following on 21 April to the committee for defense of the Meuse Valley: "There will be no new construction of nuclear plants at Chooz before the holding of a national debate for the purpose of informing the French people, who can then make their opinion known by means of a referendum."

The Chooz site already includes a small pressurized water nuclear plant. However, Electricite de France was hoping to construct four additional reactors there, each having a power rating of 1300 megawatts. This plant, which is located near the Belgian border, is arousing criticism not only from the local population (most of whom were opposed to the project during a "wildcat referendum") but also from many important Belgian individuals. A recent report from the Walloon planning office denounced "the lack of guarantees against danger of nuclear accidents, particularly contamination of the Tallfer ground water table which supplies the town of Namur with drinking water."

Will the probable reconsideration (at least for some time) of the Chooz plant be followed by other shutdowns? This is difficult to say. The socialist energy policy was presented in a report ("Energy: The Other Policy") in the month of January. This text furnishes a list of "open sites" where work will continue (Gravelines, Paluel, Flamanville, Le Blayais, Chinon, Saint-Laurent-des-Eaux, Dampierre, Fessenheim, Bugey, Saint-Alban, Cruas, Tricastin, Creys-Malville) and "unopened sites (while waiting for the nuclear debate to be settled)" (Le Pellerin, Penly, Plogoff, Nogent-sur-Seine, Golfech, Civaux, Cattenom, Chooz, Saint-Etienne-des-Sorts, Belleville, Port-la-Nouvelle, the Allier site, the Adour site, the Saone site).

Furthermore, this list should not arouse any surprises, since the Cattenom site, which was declared "not open," has already received 1 billion francs in investments.

Referendum?

But, just as Mr Mitterrand refused to recognize himself entirely within the socialist scheme of things, even accusing Giscard d'Estaing of lying about his intentions when he quoted this text, so is he unsure that he would adopt the energy policy defined in that fashion. Thus, Mr Mitterrand was cautious during the televised debate with regard to the referendum, saying "This is a proposal that I made. The only trouble is that it runs into a great obstacle, namely, changing the constitution... This type of referendum would certainly be very satisfactory but, since the constitution forbids this,* before one goes as far as modifying the reforms of the constitution, you know, we will have so many things to do after 25 May that I don't want to devote my time to the work of a legal writer..." In the same vein, the president of the republic added that a municipality could not have "the right to veto installation of a nuclear plant on its territory (the right of consultation, yes, but not the right to veto)."

Therefore, it appears that no other decision will be made quickly, (besides, there is no hurry except perhaps for the Cattenom site), especially since the nuclear industry employs 240,000 people and since the growing policy for saving energy will certainly create jobs, which are not however interchangeable.

Furthermore, it should be pointed out that energy is one of the areas where the socialists will have the greatest difficulty in having their ideas applied. After having protested for 7 years against the non-submission of the energy policy to Parliament, the socialists cannot fail to support a temporary halt in the nuclear industry in the chamber of deputies. However, it will be difficult for them to muster a majority even if they win many seats in June. Aside from the former majority, the communist party has in fact never concelaed its desire to have the present nuclear program continued provided that Creusot-Loire is nationalized, a condition which should be met within the next few months.

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* [Article 11 of the constitution provides for a referendum only for the organization of public powers, approval of a community accord and ratification of a treaty. Article 89 considers changes in the constitution itself.]

BRIEFS

EURODIF ENRICHMENT PLANT--Uranium Enrichment. Last Eurodif Shop Placed in Service. Part of the fourth and last Eurodif shop, the civilian uranium enrichment plant, located at Pierrelatte in the Drome has just been placed in service. Of the 20 enrichment groups that it houses, only one has been placed in operation. Another 15 will be in service by this summer. Eurodif will then be in a position to produce 10 million separation work units. Full capacity (10.8 million separation work units) will not be achieved until the first few months of 1982. At that time, the enrichment plant will be able to meet the fuel requirements of 80 1000-megawatt reactors. By the end of last year, Eurodif had already produced 6 million separation work units, half of which were bought by Electricite de France. [Text] [Paris LE MONDE in French 15 May 81 p 36] 7619

CSO: 5100/2251

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July 1, 1981